

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:**Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-017240**Date Inspected:** 05-Oct-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1000**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1830**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

- A). Field Splice E6/E7
- B). Field Splice E7/E8
- C). Ventilation Access Hole, Insert Plate
- D). Erection Access Hole, Insert Plate

A). Field Splice E6/E7

Later in the shift, the QAI observed the Flux Cored Arc Welding (FCAW-G) of the weld joint identified as Weld Number (WN) 6E-7E-C1 and C2. The welding was performed by the welder /operators Rory Hogan ID-3186 and Jeremy Dolman ID-5042 utilizing the WPS ABF-WPS-D15-3042B-1, Rev. 0. The WPS was also used by the QC inspector William Sherwood as a reference during the monitoring of the welding and verifying the welding parameters which were observed as follows: 250 amps, 24.0 volts and a travel speed measured as 190 mm. The QC inspector also verified the minimum preheat temperature of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The welding was performed in the overhead position (4G) with the work at approximate incline of 22 degrees and the weld metal deposited from the underneath side.

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B). Field Splice E7/E8

The QAI observed the Complete Joint Penetration (CJP) welding of the edge plate field splice identified as Weld Number (WN): 6E-7E-B1. The welding was performed by the welder Hua Qiang Hwang ID-2930 utilizing the Shielded Metal Arc Welding (SMAW) process and the 3.2 mm electrode as per the Welding Procedure Specification (WPS) ABF-WPS-D15-1040B-1, Rev. 0. The WPS was also used by the Quality Control (QC) Inspector John Pagliero to verify the Direct Current Electrode Positive (DCEP) welding parameters and to monitor the Complete Joint Penetration (CJP) welding. The QAI observed the QC inspector verifying the welding parameters and were noted as 133 amps. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with contract documents. The welding was performed in the vertical (3G) position and the work placed in an approximately vertical plane with the groove approximately vertical. The contractor has elected to utilize a copper backing bar in lieu of the steel backing bar.

The QAI also observed the welder Xiao Jian Wan ID-9677 performing the CJP welding of the edge plate field splice identified as WN: 6E-7E-F1. The welding was performed utilizing the Shielded Metal Arc Welding (SMAW) process and the E7018 H4R 3.2 mm electrode. The welding was performed utilizing the WPS identified as ABF-WPS-D15-1040B-1, Rev. 0 which was also used by the QC inspector as a reference. The QAI observed the QC inspector verify the welding parameters which were noted as 120 amps utilizing the 3.2 welding consumable. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. The welding was performed in the vertical (3G) position with the work placed in an approximately vertical plane with the groove approximately vertical. The contractor has elected to utilize a copper backing bar in lieu of the steel backing bar.

Later in the shift, the QAI observed the fillet welding of the fitting gear and the field assembly fit-up of the side plate field splice identified as WN: 7E-8E-C1 and C2. The welding and the assembly fit-up were performed by Eric Sparks ID-3040 utilizing the SMAW process as per the WPS ABF-WPS-D15-F1200A Rev. 1. The WPS was also used by the QC inspector William Sherwood as a reference to verify the DCEP welding parameters and were noted as follows: 131 amps. Later in the shift the QAI observed the QC inspector verify the preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The welding was performed in the overhead position (4G) with the work at approximate incline of 22 degrees and the weld metal deposited from the underneath side.

The QAI also observed the fillet welding of the fitting gear and the field assembly fit-up of the side plate field splice identified as WN: 7E-8E-E1 and E2. The welding and the assembly fit-up were performed by James Zhen ID-6001 utilizing the SMAW process as per the WPS ABF-WPS-D15-F1200A Rev. 1. The WPS was also used by the QC inspector William Sherwood as a reference to verify the DCEP welding parameters and were noted as follows: 136 amps. Later in the shift the QAI observed the QC inspector verify the preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The welding was performed in the overhead position (4G) with the work at approximate incline of 22 degrees and the weld metal deposited from the underneath side.

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C). Ventilation Access Hole, Insert Plate

The QAI observed the continued excavations and repair welding of the R1UT rejects discovered during the testing performed by QC technicians. The repair welding was performed on the ventilation access hole insert plate identified as Weld Number (WN): 1E-PP10.5-E2-L1E-S. The welder, Darcel Jackson ID-9967, performed the welding utilizing the Shielded Metal Arc Welding (SMAW) as per the Welding Procedure Specification (WPS) identified as ABF-WPS-D15-1001 Repair, Rev. 0. The WPS was also utilized by the QC inspectors Steve McConnell as a reference to monitor the welding and verify the Direct Current Electrode Positive (DCEP) welding parameters which was recorded as 197 amps by the QC inspector. The 4.0 mm electrode was utilized with the welding performed in the flat (1G) position with the work in an approximate horizontal plane and the weld metal deposited from the upper side. The minimum preheat temperature of 20 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius were verified by the QC inspector.

Prior to the welding of the repairs the QAI verified the linear length of each excavation and were noted as follows; excavation No.1, 105 mm-L, No. 2, 120 mm-L, No. 3, 105 mm-L, No. 4, 95mm-L, No. 5, 110 mm-L, No. 6, 215 mm-L, No. 7, 110 mm-L, No. 8, 105 mm-L, No. 9, 105 mm-L, No. 10, 135 mm-L, and No. 11, 115 mm-L.

D). Erection Access Hole, Insert Plate

The QAI observed the Ultrasonic Testing (UT) of three (3) Complete Joint Penetration (CJP) groove welds on the Erection Access Hole, Insert plates identified as WN: 1E-PP11-E4-W2, W3 and W4. The testing was performed by the QC technician Steve McConnell utilizing a G.E./Krautkramer USM 35X. The examination of the CJP was conducted utilizing UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 and the applicable contract documents. The QC technician performed the required longitudinal wave technique, utilizing a 25.4mm diameter transducer, to perform the examination for base metal soundness and the shear wave technique for the examination of weld soundness which was performed utilizing a 16mm x 19mm rectangular transducer. At the conclusion of the testing there were rejects noted by the QC technician on each of the groove welds and are recorded as follows; WN: 1E-PP11-E4-W2, 2 rejects; WN: 1E-PP11-E4-W3, 4 rejects and WN: 1E-PP11-E4-W4, 4 rejects.

Later in the shift, the QAI observed the excavations of rejectable flaws discovered by the Ultrasonic Testing (UT) technique. The excavation process was performed by the welder, Darcel Jackson ID-9967, utilizing a high cycle 4" grinder and rotary file.

QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above, which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW welding process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

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The digital photographs below illustrate the work observed during this scheduled shift.



Summary of Conversations:

There were general conversations with Quality Control Inspector Bonifacio Daquinag, Jr. at the start of the shift regarding the location of American Bridge/Fluor welding, inspection and N.D.E. testing personnel scheduled for this shift.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

Inspected By:	Reyes,Danny	Quality Assurance Inspector
Reviewed By:	Levell,Bill	QA Reviewer
